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SOME PREVENTIVES.¹

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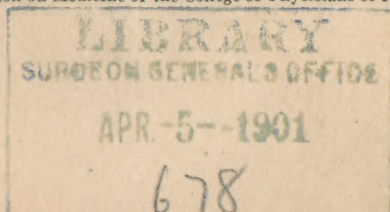
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WHEN your chairman tendered me the privilege of opening the winter session of your Section, I accepted that honor with great diffidence, for a stranger should not appear before a medical audience of Philadelphia, least so before the College of Physicians, without some good reason. I have no new discovery to communicate, nor even a new name for an old one. What I can offer is less a contribution than an introduction to your labors.

Modern medicine is more successful than that of our ancestors for several reasons. The methods of examination and diagnosis are more numerous and more correct; etiology is better understood—amongst the recent aids to both etiology and diagnosis bacteriology and chemistry take no low rank—and the means of treatment are both ampler and safer. Medication has become more experimental and the empiricism of the bedside and of the operating-table is growing more imbued with and dependent upon the labors of the physical, chemical, and biological laboratories.

The object of medical science and art, however, is not confined to removing disease; it includes also prevention. Again, it is the laboratories that have furnished new incentives to preventive medicine, by offering new methods or explaining and justifying old

¹ Read before the Section on Medicine of the College of Physicians of Philadelphia, October 10, 1898.



ones. The latter were frequently empirical only ; still, quite often in the history of medicine, facts had to precede their explanation, and practice theory. An experiment is not necessarily infallible, a microscopical observation has frequently proved a mistake, and numerous clinical experiences which extend over a reasonable time and terminate in equal results are as worthy of acceptance as laboratory-research. They compensate one another and act in cooperation.

Prevention has learned a great deal from modern methods. As I, however, am not a pathfinder, nor even an expert in those branches that are by preference called exact by their creators and augurs, I shall speak of a few preventives that do not exclusively rely upon an immersion-lens, or a disinfecting stove, or on a bacillus-hunt—on all of which, it is true, clinical medicine, sanitary science, and the interest of mankind have to rely. I request you to follow me in the consideration of a few preventives—without accompanying experiments and camera-illustrations. I shall consider some few practical means of preventing deaths from puerperal fever and from the sepsis of the newly born, also of preventing senile morbidity, or rather premature senility, and finally, if your patience and time will permit, of preventing fatal terminations by medication.

The prevention of puerperal fever and of the sepsis of the newly born, both of which are frequent causes of death, is best secured by the proper management of normal labors amongst both the rich and the poor.

What is it that is required to conduct a normal labor ? The obstetrician, man or woman, physician or midwife, should have clean hands and body, short-cut nails, and unsoiled clothing ; should know enough to distinguish a normal from an abnormal position, and enough of antisepsis to employ soap, alcohol, and corrosive sublimate in the usual proportions ; should see to it that

the room is aired, and the woman's clothing and her bedding absolutely clean. Her bowels should be moved by an enema; her bladder emptied, if necessary, by a clean glass catheter. A single examination should be made, to ascertain the position of the fetus; a single warm injection given, and no further manipulation permitted, with the exception, later on, in case of hemorrhages, of the administration of hot injections. The scissors with which the cord is to be cut, and the tape to tie it, should be kept aseptic, according to the simplest known principles.

Immediately after labor a douche should be employed under the following circumstances *only*: If there be hemorrhage, then it should be hot, very hot; if there were purulent discharges before labor; if the fetus had been putrid; if a hand was introduced into the uterus; if there were a laceration. Under ordinary circumstances the woman should be thoroughly washed with an antiseptic, and no soiled material should at any time be allowed to remain after labor, or on any of the following days.

The vagina should be left alone. It is aseptic in ordinary cases; the billions of bacteria swarming in it are not pathogenous; they keep the vagina acid, and do not admit pathogenous germs. Moreover, the operculum of the cervix, which is germ-free in its intrauterine part, acts as a partition between the uterus and the vagina. Finally, the amniotic liquor and blood will flush the vagina and contribute to keeping it aseptic. For these reasons no irrigation is required, or is even admissible before or during labor, unless there be gonorrhea, or carcinoma, or as the preliminary stage of an operation.²

² Many of these points, amongst hundreds of other topics, are amply discussed by Dr. A. Brothers, in the William Furness Jenks prize-essay of the College of Physicians of Philadelphia, 1896.

Could women of average intelligence, who can read and write, be taught these things? We make doctors of them; why not midwives? Let them know that, under strict laws or regulations, they have to send for a doctor when there is an abnormal position; when labor is unusually protracted; when the woman's general condition appears to render it advisable; when part of the placenta is retained; when the perineum is torn; when there is an unusual odor about the lochia; or when there is an elevation of the vaginal temperature of the mother; or of the rectal temperature of the newly born; or any anomaly about the latter. Every woman can be taught the use of the thermometer; the examination of the rectum in case of the non-appearance of meconium; of the skin for nevi, etc. No physician could do more, or should do more, in a normal labor. When it comes to the mystery of bandaging, a woman can learn that better than most men; and as far as the first bath of the baby is concerned, she can learn how to use water that has been boiled, and how to protect the eyes and the cavities against unclean admixtures.

Is there a need of midwives, or should every normal confinement be attended by a physician? What happens where there is no physician? In villages and townships I frequently heard of farmers' wives who had neither doctor nor midwife, but an untrained neighbor's wife to assist her. There is no question but that she would have been better off if she could have obtained the services of a woman prepared to attend her during her confinement and afterward to look after her and her baby.

Those of us who are acquainted with the conditions of the poor know that the cases in which the tenement-house women are attended—if the term may be used in that connection—by their friends and neighbors, as un-

informed and unclean and incautious as themselves, are very numerous indeed. Diseases and deaths among both women and infants are very numerous. No obstetrical dispensary can take care of all of such cases. If it could, the physician could never render all the services required by mother and child during a week or more. The poor woman wants daily attention, her bed made, her linen changed, her body washed, her baby attended to. No matter whether a daily bath is given, or the baby be washed only, or, as a modern gospel wills it, kept without bathing or washing, the diapers have to be changed, and the baby cleaned and kept clean. The cord is at least to be inspected, the mouth kept out of harm.

In regard to asphyxia of the newly born anybody can be taught the following things: that it may lead to convulsions, paralysis, epilepsy or idiocy; and that it should be prevented, or shortened, by all possible means; that unless there is a vital indication to assist the mother, the baby should be attended to first; and that the necessary means of resuscitation should be resorted to immediately. Any intelligent person can be taught to alternate a warm bath with a cold plunge, or the affusion of cold water, the raising of the head from the soiled bedding, the beating of the nates, tickling the fauces, the momentary inhalation of ammonia; the ligature of the cord when the pulse begins to flag, or instantaneously when deep asphyxia requires measures that cannot be taken while the baby is in contact with the mother; also the method of artificial respiration of Silvester or of Laborde. Any intelligent woman may also learn that she should avoid blowing into the mouth or nares of an asphyctic baby, and should herself under no circumstances employ electricity for the purposes of resuscitation. During her course of instruction she may be told the reasons. She may forget these, but she

must not forget the rules, which she must not break without incurring some penalty for her transgression. Personally, thirty or forty and more years ago, when I had a large obstetrical practice, I met many a woman taught in transatlantic countries, who knew most of these things well and obeyed to the letter the rules imposed upon her by teaching and by habit. That was self-understood, and no difficulty was encountered.

The woman can also be taught and be compelled to leave alone a hydrocele, a hematoma of the scalp or of the sternocleidomastoid muscle; a milk-induration of the infant's mamma with the exception of the very gentlest massage; and the usual form of afebrile jaundice. She can learn to treat the cord without fat or oil, and with an aseptic dry powder and gauze; a red eye with a 1 or 2% solution of silver-nitrate once a day until a doctor sees it; and accidental or an occasional congenital constipation with an enema. She will know that a sore cord or skin, or an eruption, a sclerema, a hemorrhage, a hernia, or a rise of temperature requires the presence of a practitioner, though there are some preliminary measures she should be acquainted with and which she should not omit to employ.

During her instruction she will learn, and when she begins a practice, she will be held to give no medicines whatsoever, and no food-compounds beyond the mixture of aseptic, that is boiled, milk with water or a thin cereal decoction. There are some things she will learn, easily comprehend, and practise, that even no doctor out of twenty knew or lived up to a score of years ago. She will learn how to treat, or rather how not to maltreat, the infant-mouth; that the integuments of the newly born, both epidermic and mucous, undergo spontaneous desquamation and thereby become very vulnerable; that the mucous membrane of the mouth, and particularly that of the alveolar processes, is very thin

so that a mere screaming spell renders its posterior part anemic and tense during the traction of the pterygoid muscle alone; that the slightest pressure by the hand or a coarse cloth during the washing or other cleaning of the mouth may cause ulceration that heals slowly and opens the gates of infection in the buccal cavity to the aphthæ of Bednar at least; to the same extent and in the same way that harm is done later on by the inconsiderate lancing of the gums, which is known not only to injure the tooth, and to alter the gums, but also to furnish opportunities for septic invasions. These are simple things at present. A few years ago they were revelations to us; still they are so simple that they are understood by the plainest mind.

However, if an intelligent woman can learn and do all this, she is not above a doctor. Why should not a doctor have that obstetrical practice, and why should it be taken away from him? Because part of the work outlined and suggested is nursing and not medical. The medical man has no time and no wish for it, and, perhaps, no dexterity. Amongst the well-to-do he employs a nurse for those things. He should live on his medical practice, and not starve on it.³ That is why he is expected, and hopes, and longs to be, and is, in daily contact with infectious diseases, and liable, almost certain, to disseminate them. Conscience and law should prohibit a medical man from engaging in both general practice and obstetrical work. That is so well understood, that in large cities there are medical men who refuse everything but confinements, which are their specialty. Such rich persons as engage their services know they are applying to a man or woman in whose knowledge and asepsis they have reason to repose implicit confi-

³ We are not so fortunate, as, according to Herodotus, the ancient Egyptian doctors, "who had many advantages," he says; "who spent and consumed none of their own property, but ate the ritual offerings, and received every day many geese, and meats, and wine."

dence. But the vast majority of parturient women are poor, and it is the families of the poor that have most babies. There are no specialistic obstetricians for the poor; obstetricians cannot live on missionary work; they must be paid; and the vast majority of such cases must go without that privileged kind of service. It is amongst part of this class, as long as it is not absolutely abject, that poor doctors practise and try to make a living and future practice; from scarlet fever and typhoid they go to a case of labor, and from one infected case to the next. In that respect they are not much safer than an uninformed, untrained, unwashed female attendant.

I am told that doctors must live. Surely they must, but perhaps not as doctors. Many would be better off in some other vocation, or business. There are but few of us who are predestined by nature and gift for the practice or science of medicine. Indeed, many of us would have served both themselves and mankind as well in some other capacity as in medicine. For most men and women—most of the man-and-woman question is one of livelihood—embark in their preparations for either their calling or their trade without a fixed character or ethical aim. That is why, from all points of view—too many to be considered here—it is improper to entice the average of immature boys or girls into medicine.

I said, doctors must live, or should live; but the women should also live, and so should the babies.

In order to do so they require the application of simple medical and dietetic and hygienic knowledge, which should be furnished either gratuitously or at the lowest price, that is at such a price as no physician could or should be satisfied with. The community the State, has the greatest interest in saving women and babies, if only for economic reasons; for every human

being dying early is a loss of labor and means. From that point of view, and as a matter of morality and ethical duty, none should be sacrificed that can be saved.

The prevention of puerperal fever of women and babies is not an exclusive matter that concerns the poor millions only. Every case of puerperal fever, erysipelas, scarlatina, or diphtheria in a distant tenement-house endangers the rich also. It is from the poor that their help comes, their servant-girls, cooks and coachmen, their laundresses and perhaps itinerant teacher, aye, even their clothing, ready made in a sweatshop.

It is easily seen that sometimes the absence of a busy doctor from the bedside of a parturient woman and her baby may be a blessing. It is the all-around doctor in large practice who has the greatest number of obstetric and of scarlet fever and diphtheria patients. The greater his reputation the worse his cases. How many times I had a tracheotomy and a confinement in the same night, and hurried from the former to the distressed woman, in order not to be too late for the final act, I cannot tell now. We know that those were well off who could not wait for the arrival of the doctor, and had to be satisfied with the faint-hearted congratulations of the unwashed and disappointed medical man. In spite of Holmes and Semmelweiss, I am afraid I saw as much puerperal fever as any living obstetrician of those times. The general statistical figures are simply terrible. M. Boehr collected for the years 1816-1875 the deaths in Europe from cholera, which were 170,000, from variola there were 165,000 deaths, from puerperal fever, 363,624. Many of the last occurred after Oliver Wendell Holmes, in 1843, proved puerperal fever to be a contagious disease—while still, in 1844, the great Litzmann characterized it as "a febrile miasmo-contagious dis-

ease peculiar to puerperal women"—and after Semmel-weiss reduced, by the use of calcium chlorid, the mortality from 12 to 1.2%. The statement that puerperal fever is on the wane at present should be taken with many grains of salt. Since I gave up the practice of obstetrics, personally, I have still been amongst those who had the fever, and not infrequently met with several cases in the practice of a single practitioner, also of a single widwife. The patients die, but do not always appear under the heading of puerperal fever, which is no longer passed by with respectful awe by searching health-officers. Those deaths are ascribed to pneumonia, pleurisy, peritonitis, parametritis, nephritis, or endocarditis. That is the way in which statistics are doctored by the doctors.

I do not pretend to speak here of the ills doctors are exposed to, but of those prevalent amongst the people. In the interest of the people it would be better if there were midwives, sufficiently educated, controlled by health-boards, and willing to make a decent living—sufficient for them—amongst the population at large, where the fees are too small and the services required too onerous for medical men or women. How they should be educated, and how controlled, cannot now be discussed. I believe means to that end could easily be found; more easily perhaps than 25 years ago, when the whole question was brought up in the Medical Society of the County of New York. In that discussion one per cent. of the members present voted for a legal status of midwives. I think I was that one per cent. Then, as now, it had to be admitted that midwives, or such as claimed to be midwives, existed and practised, as the case might be, their innocuous, dangerous, or nefarious methods. But the profession refused to favor the legalization and control of midwives. What was the result? Midwifery-schools were established by quacks.

A gentleman who lately opposed, before the section of obstetrics and gynecology of the New York Academy of Medicine, the legalization and control of midwives, said that the average midwife is entirely incapable of foreseeing complications, and of grasping, and still less carrying out, the principles of antisepsis. That is true of the present midwife whom nobody teaches and nobody looks after. Before we were better taught and looked after, was it we that did better in either internal or operative medicine, or in obstetrics? I remember the time quite well when it was considered discourteous not to request every one of the medical bystanders to examine the abdominal cavity after an operation for strangulated hernia. As the patient was under chloroform, it did him no harm. It did the undertaker lots of good.

We are told by the same gentleman that children suffer even more than the mothers. Stillbirths in Berlin, he says, occur in 3% of confinements, in 8% in New York, where midwives are not controlled, but permitted to practise upon the recommendation of a single physician. I should here add that in Berlin they have hundreds of midwives, instructed and supervised; very few or none in New York.

If we are told that midwives are "most inveterate quacks, and never acknowledge their ignorance," I should say, let them be punished for it, as a doctor is for his mistakes or crimes. I also share the opinion that "a war of extermination should be waged against the pestiferous remnant of pre-antiseptic midwives and schools of midwifery;" and we all say amen, and—include the doctors.

Our author says it would probably be necessary to respect the so-called "vested rights" of those who formerly practised midwifery. That opinion I do not share; for the law of the land has done away with the "vested

rights" of the quack doctors very speedily and vigorously as soon as the right of a citizen to have a respectable or at least "chartered" doctor was once recognized. And why should there be "unsurmountable difficulties" in the way of legal supervision of midwives, when that procedure is so very simple in reference to five or ten times their number of medical men?

Thus, when a bill was proposed to abolish midwives for all future, for the reason that "midwives by their ignorance and lack of cleanliness do great harm to parturient and lying-in women, and assume to administer potent drugs to them without the advice of a physician, and often treat sick women and children, and frequently are guilty of causing abortions," we are expected to take it for granted that women cannot be taught to learn and to wash, and to keep from doctoring and medicating, and causing abortions, and that it is only a chartered medical man who is able to be clean and aseptic, and unable to cause abortions. "Credat Judæus Appella."

On the other hand, in the county of Erie, N. Y., "midwives, after having passed a successful examination, are entitled to practise midwifery in normal labors, and in no others; but such persons shall not in any case of labor use instruments of any kind, nor assist in labor by any artificial, forcible or mechanical means, nor perform any version, nor attempt to remove adherent placenta, nor administer, prescribe, advise, or employ any poisonous or dangerous drug, herb, or medicine, nor attempt the treatment of disease, except when the attendance of a physician cannot be speedily procured, and in such cases such person shall at once and in the most speedy way procure the attendance of a physician. The board of examiners shall have power to recommend to the judge of Erie County the revocation of a license, and said judge shall have power to revoke the same.

"Any person who shall practise midwifery, or, without the attendance of a physician when one can be procured, attend a case of labor within the county of Erie, without being duly authorized so to do under existing laws of this State, or without having received and recorded the certificate named above, and any person who shall violate any of the provisions of this act, shall be fined and shall forfeit any certificate theretofore granted under the provisions of this act." (N. Y. State law.)

It has always appeared to me that a satisfactory instruction and control of midwives are easier than the same in regard to practitioners of medicine. What the former have to learn and to practise is limited. Ignorance and malpractice are readily detected. How difficult that is amongst practitioners of medicine becomes apparent to those who mingle with many in examinations and in consultations. At all events it is clear that a more careful and aseptic guidance of the mother and of the newly born will save the lives of both women and infants. Is that difficult to obtain? If it is, it is not easier for practitioners than for midwives.

Of the deaths of infants that take place during the first year, 25% occur in the first three months. Many of the causes of this waste of life are beyond medical aid. Seasons and climates, race, city or country, soil and dwelling, precocious marriages, financial circumstances, the prices of foods and dress-goods, the prevalence of endemics and epidemics, of alcoholism and syphilis, the ignorance of the people and of medical men, are amongst the most influential causes of excessive infant-mortality. Many of them could be prevented by social improvements, which have to go beyond the puny efforts of floating hospitals and fresh-air piers. Still even they prove that the public conscience and the sense of mutual responsibility are awak-

ening, and it is to be hoped that our people will rise to the recognition of its own perishing reconcentrados, young and old. The English infant-life protection-act of 1872 and the French *loi protective des enfants* of 1874 are amongst the first instalments of the public debt paid to infant-life. Foundling hospitals and asylums and special hospitals have partially missed their aims, for no other reason than because the laws of infant-life, health, and mortality were, and still are, but imperfectly understood. It was mainly the frontier territory of the pathology of the very young that was a terra incognita. Our ignorance was the cause of indolence. It became an axiom that nothing could be done with and for small infants. It has taken a long time for us to be taught that no class of our population and of our patients is more endangered by waiting idleness—we prefer to call it expectancy—than the very young; and I fear it will still take a long time before the physician who is thoroughly conversant with the physiology and pathology of infancy will be officially recognized as a peer amongst the teachers of medicine, and pedology as one of the most desirable facts of medical science and art.

As we are only now emerging from the stage of childhood in the evolution of medical education—I should know something about that, having been connected with teaching institutions these 40 years—we should, perhaps, not expect pediatrics to take a high rank amongst the acknowledged branches of learning in our medical schools. As late as 1859 there were no systematic courses of instruction in pediatrics in our country. Amongst the first, however, who paid attention to it at all, were a number of Philadelphians. After Rush and Bard there come Caldwell, in 1776; William P. Dewees, in 1825; Joseph Parrish, in 1826; William E. Horner, in 1829; W. W. Gerhard, in 1833;

D. F. Condie, in 1847; J. Forsyth Meigs, in 1848; Ch. D. Meigs, in 1850, and my friend Parry, who died too soon, a few years afterward. The first special clinic, for which a single weekly hour was considered all that could be spared, was established in the New York Medical College in 1886; it died, with the college, in 1865. Since that time similar clinics have gradually been established all over the States; but pediatrics is not yet given a leading part. In most colleges the attendance upon children's clinics is not obligatory this very day. Few professorships exist for pediatrics; and they are mostly nominal. The neglect shown it by the official faculties is readily taken by students as their guidance, and the results are unavoidable. Infants cannot complain, and they cannot vote; even less so than the privates in an army. The old principle, "*infans nondum homo*," an infant is not quite a human being, has not died out yet. That the embryo and the fetus are of still less account is only too true. Genuine humanitarianism has not yet risen to the dignified place held even by the unborn in the teaching of at least two religions—the Jewish and the Roman Catholic. After all, I hold that teaching pedology as an obligatory study, mainly at the bedside in children's hospitals, and raising it to the dignity of full chairs in our leading institutions, is amongst the most valuable means of reducing infant-mortality.

As the principal mortality of the first year is due to disorders of the digestive, and that of the following period to those of the respiratory organs, the preventive measures to be taken appear to be self-evident. Infant-feeding has been made relatively safe by the methods calculated to destroy pathogenous germs; I say pathogenous, for the presence of others in the milk of women, and in the meconium, and in the stomach of the newly born, as early as a few hours after birth, is either indif-

ferent or beneficial. By rendering infant-food germ-free, a number of diseases and deaths are prevented; mainly, the army of infectious intestinal disorders, with consecutive renal, meningeal, encephalic, and respiratory troubles, not to speak of the chronic marasmus that swells the death-lists often without an appreciable anatomical cause.

Now, beyond the means of prevention furnished by bacteriology, we have not advanced much these scores of years. The same questions belonging to the chemistry of the milk, and to the composition of infant-food, are answered differently in different quarters, with equal assurance. A famous author, in spite of the physiological fact known these 30 years, that there is saliva and pancreatic juice in the infant economy, has only lately been converted to a faith in farinaceous foods, and is experimenting with other than milk-sugar; and he comes to the conclusion, based on I do not know how many sleepless nights, that the feeding on woman's milk may be carried on too long. Many begin also to find out that cow's milk may be done to death by inconsiderate cooking, and that the latter is not rendered more sacred or more wholesome by calling it sterilization.

The belief that infants and children require much food is correct. They require material not only for reproduction but also for increase. In order to gain 25 grams daily during the first half-year, they require daily from 8 to 10 grams of proteid, 2.6 of which are demanded in the interest of growth. But over-alimentation during a normal condition has its serious drawbacks which should be prevented: Dilatation of the stomach, and diarrheal diseases, rickets, adiposity, diseases of the skin, convulsions, biliary and renal colic, and myasthenia and myalgia depending upon the accumulation of phosphates and lactates in the muscu-

lar tissues. Over-alimentation may also lead to atrophy in different ways, so that the diagnostician of a case of atrophy has not to look for starvation in intestinal disease only. When the stomach is too full the gut does not digest. A few months ago, before the Moscow Congress, von Mering detailed the following experiment: He cut the duodenum and sewed the two ends to the abdominal wall. When the stomach was full, and the intestine was full, the function of the stomach ceased. When the intestine was empty the stomach would work and discharge its contents. Until then, no normal secretion of hydrochloric acid would take place, but decomposition only. In this way stuffing leads to illness and atrophy. This may happen besides, for reasons that we should be anxious to discover, when there is a sufficient amount of food, and when the stomach and the intestines and feces appear to be quite normal, so that there is no sugar, and but little albumin and fat left in the feces. Even the bowels were found sterile in such cases. The only changes discoverable were in the middle-ear, in the bladder, and the pelvis of the kidneys, which may have been infected from the intestinal tract. These infants suffer from pain and sleeplessness, furunculosis, phlegmons and gangrenes. This is one of the many classes of disorders in which the ubiquitous claims of bacteriology are not sustained. We have to return to organic chemistry to fathom the most occult mysteries of nature.

In a short evening the problem of infant-feeding cannot be solved. Permit me only to add a few fragmentary axioms that I look upon as best fitted to improve the infant's health and to prevent disease: Cow's milk can never be made like woman's milk. Their physical and chemical compositions differ; mere dilutions do not change the abnormal character of cow's casein. Farinaceous decoctions protect the infant

against this abnormal casein better than water. Milk-sugar, though contained in milk, is not always the best sugar to be added to artificial foods. Plenty of water in the food of infants prevents many forms of dyspepsia, and secures normal function of the kidneys and of the liver.

Infarctions of uric acid are frequent, and those of a hemorrhagic and pigmentous nature are not uncommon, and calcareous deposits are at least of occasional occurrence in the kidneys of the newly born. Gravel and stone are frequent in infancy. All these foreign masses lead to disintegration of the endothelia, to hemorrhage, and to inflammation. Moreover, the rapid destruction of the red blood-cells in the normal newly born, and the transformation of hematin into hematinoidin, which is identical with bilirubin and biliverdin, lead to obstructions and thromboses. It is a large supply of water that should be given to every newly born as a matter of course, while the milk-supply is absent or scanty, that will prevent many of the dangerous ailments of the first weeks of life.

An exclusive cow's-milk diet is a mistake, no matter whether pasteurized or sterilized; it may cause one-sided overalimentation, such as has been described, and occasionally it produces, or aids in producing, scurvy. Cow's milk and farinacea require an ample supply of salt.

Patented artificial foods are modern achievements markedly beneficial. Like the compound pills of the wholesale druggist which are dumped on your office-tables, and the medley of composite sweatshop productions of the wholesale book-manufacturers, artificial foods produce horses and carriages, town-mansions and country-villas, bonds, stocks, and bank-directorships. But further deponent sayeth not—this evening.

Early infancy and advanced age are equally en-

dangered by a high morbidity and mortality. Among the working-class of France, as represented in trades-unions, Villermé found that between the 20th and 30th years a man would be sick 4 days annually, about the 40th year $5\frac{1}{2}$, at 50 years $9\frac{1}{3}$, at 60 years 16, at 70 years 75 days. Can this disproportion be prevented; or if not, can it be modified?

“*Senectus ipsa morbus.*” In advancing age, between the 50th and 70th years, even earlier in many, the symptoms of old age become apparent. The blood diminishes in quantity; so do its solid constituents; it is mainly the red corpuscles and the fluid albumin that decrease. The big bloodvessels become first enlarged by the loss of elasticity in their media; in many there are atheromatous deposits, and blood-pressure decreases from both causes. Part of the capillaries disappear altogether; that is how general nutrition is impaired. The latter suffers besides, on account of general atheromatous degeneration. The heart, unless locally diseased by valvular endocarditis, is flabby and its muscle feeble, and thus no longer able to propel the former amount of blood with its previous vigor. This condition, however, is not always detrimental, for a strong current would overdistend and perhaps burst the bloodvessels that have lost their elasticity and contractility.

The adipose tissue, the skin and most mucous membranes and the muscular tissues (voluntary, intestinal, and vascular) undergo atrophy. The nervous system loses much of its excitability and energy.

The loss of teeth, and changes in the respiratory, digestive, and glandular systems interfere with assimilation, respiration, and sanguinification; the bones become fragile; finally even the brain, though the very last to do so, participates in the general atrophy. Cold temperatures, exertions, and acute infections, also emo-

tional depressions, undermine the power of resistance, which may be impaired, and bad results may then be prevented by warm clothing, external heat, a cautious mode of living and a greatly stimulating occupation.

At every period of life a vigorous but adequate metabolism is required.

Exercise takes its first effect on the muscles; through them on the blood-circulation and the lymph-circulation and on the respiration. A man at rest breathes 12 or 16 times a minute, and consumes 8 liters of air; when marching from 30 to 36 liters; muscle, when active, consumes and produces 20 times as much gas as when relaxed. In that condition it generates large quantities of carbonic acid, more sometimes than corresponds with the oxygen received. The carbonic acid is accumulated, and consequently respiration is increased to remove both carbonic acid and residual air. The heart's action is intensified, and blood-pressure is increased. When this condition is kept up, or exaggerated, cardiac dilatation, or hypertrophy, or both, may be the result; mainly so when the heart-muscle is physiologically feeble, or diseased. No man in advanced age should forget that the one organ of his body that never is permitted absolute rest is the heart. That is why it requires unusual care. Old men should use the bicycle, if at all, with discretion, for the ascent of a single hill may dilate their hearts by an inch or more; and exertions after meals should be strictly avoided.

Digestion suffers, in advanced age, with the rest of the functions. Meals should be eaten slowly, be less copious, and fewer, particularly when no or little labor is performed. Good artificial teeth add, however, to life and its enjoyment. But meals should be small in advancing years. If there be anything that convinces me of the fact that all of us eat too much, it is the small quantity of food some old people, mainly women,

live and thrive on. Old people should not eat unless they have a desire for food; the occasional omission of a meal will do good. Whatever is not required for the equilibrium of a healthy metabolism swells the chances of atheromatous degeneration, of rheumatism and gout, of cholelithiasis and nephrolithiasis, and of diabetes. The principal evil is done by the prevalence of too much black meat in the food; an exclusive meat-diet is not counteracted by means of hot water, though a cunning quack says so, with great success to himself. If George Keith quotes St. Paul as saying that "strong meat belongs to them of full age," I hope he meant the vigorous age of those who do hard work. The same writer is my authority for the statement that in Buenos Ayres, where the people consume a great deal of meat, anemia, rheumatism and neuralgia are frequent. Neurotic and neurasthenic people bear but little meat, and different temperaments, as Schöpf Merei knew 60 years ago, require a conscientious adaptation of their foods. Nor should the belief in the innocuousness of certain foods, although they be taken in large quantities, be encouraged. Not what is swallowed, but what is digested and assimilated, is beneficial. Milk is not always tolerated in large quantities, and plain milk without some change, either by mixing with cereal decoctions, or with dilute hydrochloric acid, is seldom digested for any length of time. The old mixture of Dr. Rudisch, which I have used extensively these 25 years and eulogized ever so often, consists of dilute hydrochloric acid, water, and raw milk in proportions of 1 : 250 : 500, brought once to the boiling point.

I am so convinced of the good effect of a spare diet in old people, that I have often insisted that the change be made. In consequence, I have frequently seen aged men and women with sour temperaments, flatulency and muscular and mental incompetency, become cheery

and active—nor old people only. According to Keith's East Indian experience, it is the unanimous verdict that spare frames and spare eaters bear tropical climates best. Three-hundred pounders do not prove satisfactory. The teacher who initiated me into the mysteries of the alphabet was very frail and was considered tuberculous. Being so lucky as to have to live on the equivalent of \$30 a year, and not striking oil at any time, he lived on healthy but spare diet up to his present age of 87, which he spends with books and painting. Thus it happens that the feeble should not be despaired of; they may reach an old age, while the very vigorous, who do not suffer at once from their transgressions, are tempted by this apparent immunity to repeat them and succumb to their consequences. Nor do I think that the old Egyptians would, altogether, protect themselves against the results of their indiscretions by their custom of taking a purgative and an emetic three times a month.

As a rule, alcoholic beverages and tobacco are not well tolerated by aged people. Alcohol, when used regularly, though in small quantities, favors adiposity. I think I have observed a great many times that with increasing arteriosclerosis both become less acceptable, and sometimes distasteful. There are exceptions, as there are even in regard to the greatest danger to old men, viz., sexual excesses. If a stimulant be demanded, a small quantity of an alcoholic beverage, with plenty of hot water, provided it is not the habitual, though moderate, drink; or, better still, an ammonium, or a camphor-preparation, will be borne best. Drinks and clothing should be warm and a warmer climate selected; that does not exclude, however, that the cutaneous nerves and the circulation should be strengthened by the cautious use of cold water and short sessions of massage.

Water is not required in the same quantities that are demanded by the activity of all functions in early and middle life. Nitrogenous food requires more, to do away with its refuse. The liver and kidneys of the old, however, may become exposed to the same danger from the lack of water as those of the newly born. If much is required, or is wanted, it should be taken in small and frequent doses, to save the shaky heart and the arteries from sudden overexertion and overdilatation.

Should elderly and old people sleep long? That depends, provided they be of equal health and vigor, in part on their occupation, or labor. Physical labor requires much sleep, mental less.⁴ Physicians who labor both physically and mentally require more sleep than most of them can, or think they can, afford. As a general rule, old people who sleep long and eat much, provoke senile degeneration. Long sleep and big meals should be in inverse relation to one another.

By attention to the suggestions contained in these remarks, premature symptoms belonging to old age—otherwise the most incurable condition—may be prevented or postponed. Some of them are merely physical and referable to the organs of circulation. Myocardial changes are mostly responsible for congested liver, for dyspnea and for alleged nervous palpitation; and cardiac and arterial degenerations cause angina pectoris, and fainting spells. But the brain does not only suffer in its physical sphere, and from mental incompetency; the emotional life is affected also. Calcification of arteries goes hand in hand with that of ideas and of sentiments. The crotchety, distrust, and

⁴ Tissues and organs do not suffer equally from exhaustion, or waste. Atrophy leading to death consumes 90% of all the fat, but only 30% of all the albuminates contained in the body. The liver loses 70% of its fat, the brain none at all. The albumin disappears mostly from the muscles and from the skin, but less from the muscle of the heart than from those of the rest of the body. Evidently heart and brain can stand a great deal of wear and tear, and have to.

vehemence of old age is of arteriosclerotic origin. I knew an erudite, lovable and famous man, known all his long life for his gentleness and restful ways. Quite suddenly his temperament changed, without visible alterations of his physical life, to such an extent as to cause general surprise and regret. My prediction that he would soon die was verified by his speedy death from apoplexy. Such occurrences may be prevented, or postponed; but is it worth while? If the foolish question has been raised: Is life worth living? the other question may be justified: Is a long life worth attaining? A conduct according to sensible hygienic rules does not only prolong life with the outlook of merely procrastinating the undesirable symptoms, but age may be made to advance uniformly and without a disturbance of equilibrium. Then the capability to work may be less, but wisdom will take the place of activity, and serenity that of pushing restlessness. Nor will work be impossible. Those to whom it was an enjoyment will always be able to perform it under the influence of its mental stimulus. That is why so many who never looked for enjoyment as such, and as the principal aim to be reached, remain young, though they have lived long, and may mingle with and learn from those young in years.

Still, there are those who do not judge life by the number of sunsets they have seen, but by the amount of labor performed in their own interest or in that of mankind. There was your townsman, who died of old age while still young, but forced more beneficent work into a single year than many gifted men into a decade. He knew it was overwork, and also knew his personal danger. If he preferred to live in the memory of the present and coming generations to staying here in the body long and comfortably, that was his right, and, as he saw it, his duty. As medical advisers, however, we

do not deal with exceptional cases, but with the average individuals of the race; it is for them that our rules are made, and to whom our advice is given. Those with ways and aims and horizons of their own, select their own paths.

The actual treatment is not unpromising. It is true, however, that arteriosclerosis is more or less universal and progressive. To control it, the avoidance of injuries is of more importance than medicines. The slow, gradual, indeed physiologic variety is not attended with much danger, unless it be complicated by bronchitis or kindred disorders, which are often fatal. When it is preeminently renal the prognosis is worse, though not so bad as in the advanced cardiac form. The cerebral variety may prove fatal at any time, but, on the other hand, it may pursue a slow course, and even bear apoplexies with ease for shorter or longer periods.

The objects of preventive and curative treatment should be to make arteriosclerosis as slowly progressive and as uniformly physiologic as possible. Thus the harmony of well-developed and strong manhood will gently evolve into that of equable enjoyment and gradual decline.

The methods employed for the reduction of adiposity, which is a frequent prodrome or complication of senile changes, are attended with certain dangers. When emaciation takes place rather suddenly, cardiac weakness and neurasthenia are common occurrences, and even moderate exertion causes dilatation of the heart. Arteriosclerosis depending on syphilis requires great caution, for it is as little improved by mercury as many other manifestations of "metasyphilis."

The main treatment of progressive senile changes should be directed against uncommon arterial pressure, which means, mostly, an impediment in the peripheral circulation; perhaps also against sclerosis

as such. There are more means to combat the former than there are to benefit the latter. Moderate gymnastics, manual and mechanical massage, horseback-exercise, walking, also skating and cycling without overexertion, and a very moderate amount of climbing, are useful muscular exercises, but they should never overstrain the heart. Massage in the warm bath acts beautifully; still better the carbonic acid of mineral baths, such as those of Nauheim. Massage and missage are, however, different things. It requires anatomic knowledge to alternately compress and release the bloodvessels and lymph-ducts between the muscles, and few but medical men will ever be good masseurs.

Amongst the drugs, the nitrites act favorably by their power to dilate peripheral arteries, and the iodids by lowering blood-pressure and regulating the peripheral circulation. Cardiac insufficiency, which is brought about either by peripheral resistance, or by myocardial changes, or by both, requires, besides massage and rest, an occasional purgative and frequent diuretics; the use of milk in renal arteriosclerosis whose first uremic symptoms are dyspnea, headache, vertigo and tremor, and, I think, in gout also; when there is much venous obstruction with mild cyanosis, an occasional venesection; or when much cardiac dropsy, calomel. Diuretin, or better, theobromin—now and then morphin—acts much more safely than digitalis, amongst the preparations of which it is principally digitoxin that in the usual daily doses of from two to three milligrams is too likely to contract peripheral arteries, and thus to increase blood-pressure.

The last evolution of life is death. Still, even death may be deferred and eased by the methods not only of hygiene and diet, but of pharmacotherapy. The latter has been blamed for its insufficient effects when applied to impossible tasks. As long as it was

not founded on clinical observation and on experimentation, it was unsafe and unreliable. When, however, absence of preconceived theories, instruments of precision, and experiments on animals gave it a standing amongst the exact sciences, its claims grew. Unfortunately, the action of an internal remedy cannot be followed by a lay eye, like the knife of the operator, and the prejudices of the public, founded on its ignorance, have too often guided the very opinions of the medical man.

When the Vienna school, following the French under Broussais and others, elaborated pathological anatomy and diagnosis—I refer mainly to Rokitsansky and Skoda—they declared that diagnosis and autopsy were the only quintessences of medicine. Even Wunderlich proclaimed in his early career that medicine should be science, not art. But the very accuracy of the diagnoses and of autopsies facilitated the appreciation of the effects or of the failures of medicines. The co-operator of those illustrious men—Hebra—proved every day of his life that diseases, hitherto incurable, were cured and healed by local treatment. The isolation of morphin by Magendie, and of numerous alkaloids afterward, rendered medication more accurate and controllable. Animal experiments added wonderfully to the certainty of drug-action;⁵ it was soon learned that much of that certainty was due to the chemistry of the drugs; this was the first step in the direction of compounding new drugs by synthesis. By immunizing animals against the toxins of certain bacteria, bacteriologic research has created serumtherapy, and clinical experience has added organotherapy, with its wonderful results as far as tested. It takes all the

⁵ Experiments on man himself have always been the results of brutality or of ignorance, and do not count. Experimentation and observation are not identical.

egotism and mental limitation of the most famous modern serumtherapist to deny the great value of organotherapy. Still, Behring goes further than that. He coolly asserts that there is no such thing as experimental pharmacotherapy; as he never knew of it, it should not exist. He belongs to the class of men who are generally not bent upon underrating the significance of their own doings; it was left to genuine medical men to be overmodest in the appreciation of their labors. There has been, for instance, an egregious amount of talk among us about the power of nature and the incompetency of man. "*Natura sanat, medicus curat.*" Nature is the healer; the medical man just takes care of the patient, and sees to it that nature can perform its work. For instance, you are told you do not heal a chlorosis by giving iron; you simply make the diagnosis and furnish the iron, and nature's stomach and intestines and pancreas and lymph-apparatus do the healing. It is nature that saves, not you. You imagine you heal a man poisoned by plasmodia by giving him quinin; you are mistaken, it is nature that grows cinchona-trees, absorbs the quinin, circulates it and destroys the plasmodia. You think you save a man by cutting down on an appendicitis or a liver-abscess; far from it; you are only the scavenger, but nature forms exudation and adhesion and closes the wound. You keep skin and table and instruments aseptic and prevent suppuration, and think you did some praiseworthy thing in the way of prevention; you are mistaken, for nature did it by furnishing water and a healthy cell-proliferation and permitting you to compound soap and corrosive sublimate. You find a man in the gutter suffering from sunstroke kindly furnished by maternal nature; you take him away, work over him for hours with ice or stimulants and friction—no thanks to you, it is nature that empties his cerebral

blood-vessels, eliminates toxins, and restores him. You jump into the river and resuscitate a drowned person; I am mistaken—not you saved him; for it is nature that sets the machinery of his heart and lungs agoing. If “nature” gave him no respiratory and circulatory centers what could *you* do? Or you find a starving man, with a loss of one-third of his weight and in the delirium of hunger, your milk and whisky and beefsteak never save him. For if nature had not given that man digestive organs and gastric juice and absorbents, poor you, where would you be! Or you are called upon to heal a fracture; you cannot heal it at all; all you can do is to adapt the ends of the bones and keep them in juxtaposition. Can you make new cells? Can you form callus? The only thing you can perhaps do is to appear in a malpractice suit. You are not responsible for his recovery; but you are made to answer for an alleged irregularity of nature’s doings. You say all this is farcical? So it is, but the absurdity of it is not mine. If there is anything insipid in man’s so-called reasoning, it is this unmeaning wise-acredom of the relations of “nature” and doctor to each other, and the playing with words. “Words are grown so false, I am loath to prove reason with them” (Shakespeare, “Twelfth Night,” etc.).

Nature does not kill and does not heal. If there were consciousness in nature, she would feel indifferent about what she is, viz.: mere evolution. Nature is sunshine that grows harvests and sunstrokes; she makes moonshine for lovers and for burglars, and rain to feed men and to drown them, and the sun warms the unjust and the just. Nature is a Mauser bullet; stand in its way, you are hit; dodge, and you are saved—it makes no difference to nature. In nature a diphtheria-bacillus has its democratic rights and duties like George Washington, and it killed him; she has no predilections, no

reasoning ; she is cause and effect. She can be led and doctored. The engineer heals her deformities in the interest of commerce ; insurance companies correct her failures or calamities ; indeed the logical mind of man and the logical necessities of "nature" are engaged in a constant strife for superiority. In matters of health and disease of homo sapiens the doctor utilizes or combats the doings of nature. By caring he cures. Curing has long ago lost its literal meaning.⁶ It is healing.

What I mean by prevention—I may say prevention of death—in acute febrile diseases may find a brief illustration in the roborant and stimulating treatment of pneumonia. During health, the innervation and force of the heart are not easily disturbed, but every pulmonary disease taxes its powers. There is no pneumonia that may not require cardiac stimulation some time or other, for the heart is sure to suffer within a few days from dilatation, first of the right side. To what extent cannot be foreseen. The principle of waiting for symptoms to turn up is a bad one. If medication were injurious by itself, that would be an excuse for not resorting to it. When heart-failure or collapse, however, has once set in, our remedies are mostly too late. Then to busy ourselves with our subcutaneous, medicinal or rectal hot-water injections or a perfunctory dose of digitalis, not "*ut aliquid fias*," but "*ut aliquid fieri videatur*," is preposterous.

The weakness of the heart is by no means physical only, viz. : the result of the overexertion caused by the difficulty met by the blood in its passage through the lungs, but it is dynamic and physiologic. Like all other infectious fevers, pneumonia acts probably by its toxin on the functions of the heart-structure, and by impeded circulation the heart is certainly injured in its own nutrition. As far as the facilitation of pulmonary

⁶ "*Curare*."

circulation is concerned, it is not improbable that strophanthus acts even better than digitalis; at least physiologists like Cushing tell us so. The inference is that whenever we require an improvement of the pulmonary circulation for the purposes of oxygenization and of the aortic circulation in behalf of nutrition, and of the rapidity of circulation in order to facilitate the elimination of toxins, we shall do well to use strophanthus and digitalis in combination.

Should medication begin when collapse is setting in, or has occurred? This procrastination, with its sad results, may be illustrated by some comparative procedure. It is parallel to the plan of estimating the value of feeding by giving nourishment when inanition is complete, and not before. When the donkey of the gospel disappears in a ditch on Sunday, make haste to pull him out on Monday. Allow the child to drown in your well, and be sure to cover it up—the well, I mean, on the day of the funeral. Build earthworks quickly when the enemy is in your camp. That is the theory on which antitoxin is injected on the fifth day, instead of the first or second, alcohol is refused in cases of sepsis, digitalis in dilatation and weakening of the heart, ice in peritonitis, morphin in alcoholic delirium, or venesection in acute overdilatation of the right ventricle. These are not cases in which, as Musser says, “possibilities for good or evil cannot be estimated;” they belong to that very large class in which it is “necessary to invoke remedies directed to the removal or counteraction of a definite cause.”

Statistics are said to prove that pneumonias will get well without medication. Which pneumonia, and whose? It should be a great satisfaction to a man dying of pneumonia to learn that his neighbor got well without medication, if stimulation in time, perhaps venesection, might have saved his own individual life.

It is the duty of the physician to judge of and to treat his individual case, and not the pneumonia of Louis and of Dietl, and of other statisticians. Treat the man who is sick, and not a Greek name.

Prevention by medication and other treatment can be easily demonstrated by some such instances as follow: Most of the non-congenital diseases of the heart in the young and old are rheumatic. Endocarditis is liable to start quite early in acute rheumatism; indeed, in some cases it precedes the joint-affection. The physician is either called, or arrives too late to prevent endocarditis. My order is invariably, after a single attack of rheum-arthritis has occurred, to go to bed, for one or more days, on the slightest recurrence of pain, and to take a number of doses of sodium salicylate, which are kept ready for use. No delay should be permitted. Thus many a case of endocarditis, or return of endocarditis, is prevented.

Relapses of ulcers of the stomach are often preventable. I do not claim that all those which depend on embolisms during a chronic endocarditis, or on cirrhosis of the liver, can be greatly influenced, but the frequent form observed in young anemic persons may be prevented by antacid medication. It is self-understood that a careful and restricted diet, mostly milk, slow eating and small meals, are the *sine qua nons* of treatment.

The treatment of the intestinal tract is partly dietetic, partly mechanical, partly medicinal, as of most diseases of other organs or systems. Disorders of the bowels, which could have been removed, lead to disturbances of the temperament and the mind, to night-terrors and convulsions, to rhachitis, to intestinal absorption with fever and erythema and other skin-diseases, not quite rarely to peritonitis, to cystitis from the immigration of intestinal bacteria, and to toxic nephritis; in other not

uncommon cases to visceral abscesses. I need not go into particulars before this audience. Most of what I have mentioned is preventable by medicinal and dietetic treatment; and the old physicians, with their maxim "*qui bene purgat, bene curat*," hit the nail quite frequently.

Rhachitis has a tendency to get well; that is, under favorable circumstances the softened bones grow hard. Moderate curvatures disappear, or nearly so, after years, and the flabby muscles become strong and active. Should we let it alone, and not employ air, and proper food, and cold water, and phosphorus, and iron iodid, and codliver-oil in mild as in bad cases? What we have to expect, or to fear, in every case of rhachitis, are stunted growth, deformities of the extremities, the trunk, and pressure by the chest-wall on the chest; and secondary hypertrophy of the heart, subacute and chronic bronchial catarrh, with bronchopneumonia and the possibility of tuberculosis; laryngismus stridulus, with possibly sudden death; hydrocephalus and imbecility or idiocy. These serious consequences of rhachitis may be prevented by treatment. The hyperemia of the rhachitical skull and brain tends to physiologic irritation and growth; not infrequently, formerly the rhachitic children were the best scholars, and amongst the geniuses of history there are many rhachitic heads. But, if the physiologic hyperemia is permitted to become pathologic, the result is meningitic effusion and insufficient or faulty growth. To treat rhachitis in time means to add beauty and brightness and intellectuality to the world.

Phosphorus, mentioned already in connection with rhachitis, may be utilized as a preventive in other directions.⁷

The structure of the blood-vessels may be very defec-

⁷ See my "*Therapeutics of Infancy and Childhood*," 2d Ed., p. 530.

tive, their walls being thin, fragile and pervious. In such cases hemorrhage, small or copious, is a common symptom. The frequency of hemorrhages in the newly born, leading, when in the cranial cavity, to asphyxia, convulsions, idiocy, or early death, is caused besides by the lack of coagulability of the infant's blood, by the thinness of the vessel-walls, whose tissue has not yet quite evolved from its embryonal state. This or a similar condition may continue for life. This hypoplastic state, however, is not, of necessity, general; it may be local. The early nose-bleedings of some, though they have no heart-disease, and the congenital tendency to aneurysm in places where the elastic tissue, either from arrest of local development, or by microbic destruction, is either scanty or absent (mostly at the origin of branches), prove the occasional occurrence of these circumscribed and local defects. That thinness which predisposes to fatty degeneration of the intima and media, to sclerosis of the adventitia, to atheromatous endarteritis, and to the formation of aneurysm at an early age has not been made the subject of active treatment, so far as I know, except by myself. The number of such cases is naturally small compared with the total number of a large practice or clinic; but I feel convinced that the administration of phosphorus—not phosphates of any kind—with its stimulant effect on the growth of connective tissue in general, has rendered me good service in habitual tendency to cutaneous, mucous and internal hemorrhages. Hemophilia of a moderate degree and local, as it frequently occurs, appeared to improve under its use, and the children to be safer and better developed.

Nasal catarrh is apparently one of the mildest, as it is one of the most frequent affections of infants and young children. Their narrow nares, their creeping on the floor, and poking their sweet, dirty fingers into

every accessible cavity have far-reaching dangers. Nasal catarrh, with its hyperemia and soreness of the mucous membranes, predisposes to and causes chronic hypertrophy, adenoid growths, tumefaction of submental and submaxillary lymph-bodies, invasion of diphtheria and tuberculosis, and occasionally meningitis. That is so true, that adenoid growths of moderate size will get well without operation, solely by regular nasal irrigations. The latter alone will prevent and mostly heal the majority of the consequences mentioned. The hyperplastic, so-called scrofulous swellings of the neck in children, when not too old, will disappear when the original seat of the infection and irritation is attended to. Many a bacillus-hunt would not be required if other preventives of diphtheria were employed in time.

The same should be said of the mouth. Hypertrophy of the tonsils, many forms of stomatitis, diphtheria, probably also most of the rare forms of tuberculosis and neoplasms of the pharynx can and should be prevented. I have always made it a rule to keep all the integuments clean. At least once a day a physiologic solution of saltwater is poured through the nares of every infant or child over whom I have control. Big adenoids should be removed, large tonsils resected. There is more danger in a dirty nose than in an unwashed face. Only do not be satisfied with merely ordering it. I have met with many a "trained" nurse who did not know how to inject or to irrigate a nose. A mother or a child's nurse should be instructed by you personally how to do it. Here, as everywhere, when two do the same thing, it is by no means the same. There are many cases of nasal diphtheria, such as are most likely to resist the influence of antitoxin, which are still spared a fatal termination by persistent and correct irrigation of the nares and naso-pharynx.

What is our verdict in the case of a medical man

who would refuse artificial respiration to a drowned person, or water to one afflicted with gravel or gallstones, or an antidote to a chemical poison, or antitoxin in bacillary diphtheria, or mercury, or potassium iodid in syphilis, or quinin in malaria? That death, or long suffering, or life-long invalidism is prevented by appropriate treatment in these extreme cases is well understood; but the principle underlying all this holds good everywhere. Let me select a few more instances only. A baby with hereditary syphilis is kept under treatment for several months, gets well, and is discharged. The child grows up and develops symptoms of syphilis at about the period of puberty, or about the twentieth or even the thirtieth year. These are the cases of so-called "retarded syphilis." There are but few mothers with large families, growing old in hard work, that are endowed with a sufficient memory to recollect the illness of the baby born long years ago; and there are, in large cities where syphilis is mostly seen, but few medical men who see the same patient when a baby and when grown up. That is why, when syphilis is seen about the fifteenth or the twentieth year, it is easily believed to be its first appearance, unless there be a history of the disease. Personally I have seen but few such cases in which I could not trace this retarded syphilis back to the infant-eruption, so that the assumption of hereditary syphilis in the adolescent or adult not preceded by that of the infant, has become rather doubtful in my mind. Now, what is the lesson taught by such cases? It is in the same way that you insist upon protracted treatment of acquired syphilis in the adult, and allow, for instance, no matrimonial alliance, unless the person has been free from the last symptoms for years, that the baby with hereditary syphilis should be kept under treatment and observation for years to prevent relapses and consequences.

These relapses and consequences need not be characteristically syphilitic. They may be—as Fournier calls them—parasyphilitic, and exhibit symptoms of all sorts of dystrophy of early or late rhachitis, of scrofula, or of tuberculosis. The constitution undermined by syphilis, the tainted blood, the impaired mucous membranes and slightly swelled lymph-bodies furnish ever so many inlets to invasion of different kinds. Besides, there is a peculiar class of cases with which we have a great deal to do. They occur in children of from 5 to 8 years, who are reported as having never been sick, but never well. They are not always listless, and languid, but they are anemic, thin, pale, under-weight, and easily tired. You find no organ diseased, and the blood-count is not pathognomonic. If you leave them alone, and with the consolation that the seventh or the fourteenth year will set matters all right, you leave death or life-long invalidism alone. Many of these children have syphilitic fathers in whom the disease was, or was believed to be, extinct when that child was conceived. In those cases think of syphilis. No arsenic and no iron, no country air or hydrotherapy will do them any good before they have been treated carefully and persistently with mercury. These are the cases in which mercury adds to the number of red blood-cells in a remarkable manner. It has often appeared to me that the absolute belief amongst our predecessors in calomel, which was considered indispensable in all the diseases of infancy and childhood, was in part founded on the frequency of just such cases.

Pertussis is a self-limited disease. Nature will get through with it; but in many cases with the child also. As long as whooping-cough lasts there is danger from hemorrhages, from convulsions, bronchopneumonia, and perhaps connected with it, from tuberculosis; cases of encephalitis, spastic spinal paralysis, hemiplegia, post-

hemiplegic chorea, and paralysis of the abducens have been observed. Some of these direct results are liable to occur during the height of the disease. If we shorten the duration of the illness we prevent its opportunities for mischief. One of the first convincing experiences of this kind I had when a young practitioner. An infant with whooping-cough had a severe convulsion with every attack. Three days and nights either I, or a substitute, sat by, chloroform in hand, which had to be administered dozens of times every day. There is no doubt in my mind that by this active treatment I prevented either death or cerebral hemorrhage, with idiocy or epilepsy.

In gonorrhea of the male, or female, what do we prevent by active treatment and great care? Stricture and epididymitis may not count for very much, and aspermia in the male may not be estimated a great misfortune, but there are many here who have seen gonococcal arthritis and polyarthritis, endocarditis septicopyemia, and death, or at least, ankylosis and long suffering. And the woman who is the victim of a man that was insufficiently treated over the apothecary's counter, or by his medical adviser, and perhaps thought himself freed of his gonococcal tenants! We have all seen from that cause endometritis, salpingitis, peritonitis, parametritis and perimetritis; and if not death, or lifelong invalidism, both of which do happen—at all events, sterility. Most, or all of these could have been prevented.

Fine principles, when put to the test of daily practical experience, lose sometimes much of their ornamental glitter, and much of their usefulness. We hear the saying, and pass it on, that simplicity is of the greatest value in practice, and that a compound prescription is the damnation of the practitioner. If there be one indication, or one alleged indication, there should be one

remedy. Here is an example: In a case of collapse, lowering of the head is a good remedy; compression of peripheral blood-vessels another; hot-water injections into the rectum a third; salt-water infusion, either subcutaneous or intravenous a fourth; the hypodermic use of alcohol, of camphor, of strychnin, of digitalis, of caffein, a fifth, sixth, seventh, eighth and ninth, the internal use of musk a tenth, and many more. If there be any simplicity and one remedy preacher who means to live up to his own notions and teachings, let him decide as to the single one of the indicated remedies he will select. There are only a few things that are quite simple and uncomplicated; one is a corpse, and the other a coffin.

Who is it that made the rule that a prescription must contain one drug only, not two, nor three, though they chemically be ever so compatible, if not the nihilists who preached that there is nothing in medicine but autopsies, and that medicine is a science and not an art; or, perhaps, it was only exaggerated antagonism to the yard-long theriacs of the Middle Ages. If there is in illness an uncomplicated condition, give an uncomplicated drug; but be sure that the organ to which you direct your remedy is also simple and uncomplicated. Is there such a thing? Let me again take the example of the heart. When we speak of heart-failure, or a debilitated heart, does that not mean something more than the flabbiness or overextension of an Indian-rubber bag? A heart is composed of muscular, intercellular, fatty, elastic tissues; it supplies all the organs with blood, and is itself thus supplied. Its circulation is pulmonary and nutrient. Its blood-vessels are exposed to the anomalies of all of the rest of the blood-vessels. In its nerve-supply there are sympathetic ganglia and fibers; there is the pneumogastric, there are fibers coming from the medulla, and in the medulla

there is the head center of the circulation. Its normal innervation is that of the contracting muscle and of inhibition besides. If this compound body fails in its co-operative action, is it probable that a single drug will restore it in all instances? In some, certainly, for the strengthening of inhibitory power is often sufficient to gradually restore the disturbed equilibrium; but in many cases the circumstances are not so simple. Digitalis acts in many ways; according to Traube the slowing of the heart's contraction is its main effect; but aconite has a similar effect without any muscular influence. Digitalis increases arterial pressure, so does strychnin; digitalis causes diuresis by raising tension in the renal arteries; it has that effect in a lesser degree than strophanthus, which influences the arterioles less markedly. Digitalis also raises the blood-pressure, and thereby improves the nutrition of all the tissues, that of the heart included. To its action on the heart, and also of the arteries, is due the rapidity of circulation; when, however, its contracting influence on the small arteries is too intense, that rapidity is stopped. To restore it nitrates are employed.

Strychnin increases arterial pressure without an inhibitory effect. That is why when only a moderate amount of inhibition, but competent pressure is required, small doses of digitalis should be combined with good doses of strychnin. Inhibition is rather paralyzed by atropin; that is why rather large doses of digitalis are both tolerated and beneficial when combined with atropin. Spartein has little direct action on the heart-muscle and depresses the inhibiting pneumogastric; that is why digitalis, when its muscle-effect is demanded, is borne when combined with spartein, in fair doses, for a long time in succession. Such combinations are not only permissible; they are requisite. I give such combinations, say of 4 decig. daily, of digitalis or its

equivalent with half the amount of spartein for six weeks with perfect safety without going to see the patient, and with no cumulative effect; the latter cannot always be avoided when digitalis is given alone. Though I must be brief, I should not conclude however, without the remark that the combinations of so-called heart-stimulants may be much more various. Like strychnin, ergot affects the medulla and the spinal-cord centers. Caffein, camphor and ammonia stimulate both the heart and the vasomotor centers; hydrastis both the vasomotor centers and the peripheral vasomotors. Adonis appears to be almost identical with digitalis in its cardiac and arterial effects; strophanthus, with its modified action on the heart and principally on the arteries, finds its associates in convallaria and apocynum.

Fragmentary though these remarks have been, there is but one conclusion to be drawn from them, viz.: That it is sounder practice not to rely on a single remedy when the disorder is multiple, and the tissues complicated. To win battles and to render war the reverse of ridiculous, you want the cooperation of brave troops, of well informed and conscientious officers, an experienced commissariat, expert engineers, and an effective medical administration; not a single one of them only. In addition, you want to be sure of the condition of your armamentary—be they rifles or drugs. It is true, here as everywhere, that brains come in handy for guidance.

In closing, allow me to thank you for your patience in listening to the many fragmentary remarks I took this opportunity to make. The stand I take in the midwife-question from a social and a sanitarian point of view will probably be shared by many who will acquaint themselves with the ever-increasing necessities of the crowded millions of a large city or of the forced hermits of the backwoods. Nor will much objection be

raised to what I presented in connection with premature senility. I am, however, not quite so certain about the universal approval of my views on therapeutic preventives in the different camps of medicine. Indeed I am quite aware that many of those to whom we are under great obligations for services rendered to the advancing medical sciences, will quickly disagree.

Anatomists, physiologists, chemists, bacteriologists—all these pillars of etiology and diagnosis—should, however, suspend judgment. What I said was in the interest of the man, woman, or child not yet on the autopsy-table. The demands of actual practice in hospitals and at the private bedside cannot dispense with the results of the labors of those mentioned; but clinical medicine requires more than the knowledge of morbid changes and their causes; it demands means to prevent, to relieve, or to heal. That is what creates the superiority of clinical medicine over the special branches of study, and its standing as the first of all humanitarian sciences and arts. When this will be fully understood by the hosts of medical students and young practitioners, therapeutics in all its parts, diet, hygiene, and drugs, will receive greater attention.

The latter deserves it more from year to year, with the increasing results of laboratory-research, which adds to accuracy and safety. It is a queer spectacle to notice that the use and abuse of drugs is growing with the actual or pretended indifference of medical men in regard to them. More than \$200,000,000 annually are spent on proprietary medicines in this country. The pirates of the single-pill persuasion are ably seconded by the wholesale manufacturers, who supply you not only with their wares, but with the formulæ of your prescriptions. The contempt in which we are held by some of them is perhaps best shown by the way in which they show their conviction of our absolute ignor-

ance. It is only a few days ago that I received a circular in which I was taught a prescription for subdividing a certain quantity of a synthetic drug and white sugar into twelve powders.

As our medical schools are to furnish not only scientific specialists, but the physicians and the sanitarians of the country, I trust the time will come when, like the present anatomic, physiologic, histologic, and bacteriologic instruction, a course in a pharmaceutic laboratory will be compulsory.

